Notice of Allowability	Application No.	Applicant(s)	
	10/648,608	RICHARDS, PETER W.	
	Examiner	Art Unit	
	Vincent E. Kovalick	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *applicant's RCE and response to USPTO Office Action of 6/12/06; dated 10/13/06*.

2. ☒ The allowed claim(s) is/are *1-60*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date 8/25/03 & 3/3/05
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

DETAILED ACTION

1. This Office Action, dated is in response to Applicant's RCE and USPTO Final Office Action dated June 12, 2006; both dated October 13, 2006.

Based on additional searching and the merits of Applicant's remarks/arguments this application is found to be in a condition for allowance as set forth hereinbelow.

Allowable Subject Matter

2. Claims 1-60 are allowed.

3. The following is an examiner's statement of reasons for allowance:

4. Regarding claim 1, the major difference between the teachings of the prior art of record (Doherty (Pub. No. 2003/0227677) taken with Doherty et al. (6,201,521) in view of Pettitt et al. (USP 6,774,916)) and that of the instant invention is that said prior art of record **does not teach** a method used in a display system that comprises an array of micromirrors, each micromirror being associated with one or more memory cell of memory cell array to produce images, the method comprising: loading a pixel data matrix of the image; delivering th rows of the matrix in parallel into a data converter; transposing, by the data converter, the pixel data matrix into a bitplane matrix following a bitplane formant wherein matrix elements in one row of the matrix represent one pixel of the image; and sending the bitplane matrix into the memory cell array for actuating the micromirrors such that the image is produced by the micromirrors.

Relative to claim 15, the major difference between the teachings of the said prior art of record

and that of the instant invention is that said prior art of record **does not teach** a display array of micromirrors comprising the method step of shifting the delayed data elements at each time-unit of the sequence of time-units according to a shifting rule, wherein the shifting rule states that: for a matrix having *m* columns and *n* rows a) the data element of row *j* at the *k*(*th*) time-unit of the time-unit sequence is shifted to row *j*-1 at the same time –unit; and the data element at row *l* of the *k*(*th*) time–unit is shifted to row *m* at the same time-unit, wherein *k* runs from1 to *m* + *n* time-units; and b) the date elements at the *n*(*th*) and *m*(*th*) time-unit are not shifted; and delaying the shifted data elements of the matrix according to the sequence of time-units such that a pixel data row *j* at tune-unit *p* is delayed *j* time-units relative to the data element of row *j*-1 at time-unit *p*. Relative to claim 19, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method used in a display system comprising a array of micromirrors comprising the steps of transforming the pixel data matrix into a block matrix having 2x2 first order blocks, each first order block having 2x2 second order blocks, each second order block having 2x2 third order blocks, each *k*(*th*) order block having 2x2 (*k*+1)(*th*) order blocks, and the (*n*-1)(*th*) order block having 2x2 pixel data elements; transposing the pixel data matrix base on the (*n*-1)(*th*) order blocks, each of which has 2x2 pixel data elements; transposing the pixel data matrix based on the *k*(*th*) order blocks after consecutively transposes of the pixel data matrix base on the (*n*-1)(*th*) order block through the (*k*+1)(*th*) order blocks and transposing the pixel data matrix based on the first order blocks. Relative to claim 26, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method used in a display system comprising a array of micromirrors comprising a delay unit connected to the

plurality of input lines, wherein the delay unit delays the received data such that: a) a data element at input line *j* at time-unit *k* is delayed one time-unit relative to the data element at input line *j* at time-unit *k*+1; and b) the data element is delayed one time-unit relative to the data element at input line *j*-1 at time-unit *k*; and a shifter connected to and receiving output data from the delay unit wherein the shifter shifts the delayed data output from the first delay unit based on the sequence of time-units and according to a shifting rule, wherein the shifting rule states that: a) the data element of line *j* at the *k(th)* time-unit is shifted to line *j*-1 at the same time-unit; and the data element at line 1 at the *k(th)* time-unit is shifted to row m at the same time-unit, wherein *k* runs from 1 to *m*+*n* time-units; and b) the data elements at the *n(th)* and *m(th)* time-unit are not shifted.

Relative to claim 41, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** the method used in a display system comprising a array of micromirrors comprising: a multiplicity of sets of delay units, a) wherein a delay unit of the first set of delay units delays a data element one time-unit, and the delay units of the first set are connected to every two input lines, and b) wherein a delay unit of the *s(th)* set of delay unit delays a data 2(to the *s*-1 power) time-units, and the delay units of the *s(th)* set are connected to every 2(to the *s*-1 power) input lines; a plurality of sets of switches, a) wherein a switch of the first set of switches exchanges data elements between input lines 2*w*-1 and 2*w* with *s* running from 1 to *n*/2; and b) wherein a switch of the *s(th)* set of switches exchanges data elements between 2*w*-1 and (*n*/2)+*s*; and wherein each switch of the *s(th)* set of switches are located between the connected to two delay units of the *s(th)* set of delay units.

Regarding claim 43, the major difference between the teachings of the said prior art of record and that of the instant invention is that said prior art of record **does not teach** a display system comprising an array of micromirrors said system comprising: a first input line and a second input line that are associated with a sequence of time-units for receiving data elements; a first delay unit that is connected to the second input line and delays the received data element one time-unit; a switch that is connected to the first input line and the first delay unit and receives data element from the output of the first delay unit, wherein the switch switches data elements between the first input line and the delayed data element output from the first delay unit; and a second delay unit that is connected to the first input line and delays the received data element one time-unit.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Applicant's Remarks

5 The allowance of claim1 and dependent claims 2-14, renders moot Applicant's remarks relative to claim 1.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U. S. Patent No.	6,798,941	Smith et al.
U. S. Patent No.	5,442,458	Rabbani et al.
Pub. No.	2003/0197660	Marshall
Pub. No.	2003/0107539	Wood
Pub. No.	2002/0036611	Ishii

To Respond

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent E. Kovalick whose telephone number is 571-272-7669. The examiner can normally be reached on Monday-Thursday 7:30- 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala can be reached on 571-272-7681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Vincent E. Kovalick

October 25, 2006

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